

National Marine Fisheries Service Report on Maximizing the Utility and Benefit of Electronic Monitoring to Gather Information on Future Humpback Whale Bycatch Events

The National Marine Fisheries Service (NMFS) West Coast Region Sustainable Fisheries Division (SFD) in cooperation with Protected Resource Division (PRD) prepared this report to review and consider measures for maximizing the utility and benefit of electronic monitoring (EM) with respect to gathering information from any future bycatch events of humpback whales in the Pacific Coast groundfish fishery, if they were to occur. We expect that this report will serve as a starting point for further discussions between the agency, EM video reviewers, and the industry EM participants. We are providing this report to the Pacific Fishery Management Council (Council) and PRD as required by Term and Condition 4 of the 2020 Biological Opinion (BiOp) on the Effects of the On-Going Operation of the Pacific Coast Groundfish Fishery on Humpback Whales¹.

As part of the evaluation process, we considered the following factors:

- a. Placement of EM technology;
- b. Review protocols, including the amount of review and extent of analysis to be provided; and
- c. Options for supplemental documentation and data collection

While the factors evaluated in this report originated with the BiOP for humpback whales, we recognize they may also be relevant to bycatch of other protected species. Therefore, NMFS may also consider other protected species when acting on the results of this evaluation.

Placement of EM technology

NMFS SFD evaluated whether adjusting existing camera placement or adding cameras to vessels using EM in the shorebased Individual Fishing Quota (IFQ) (bottom trawl, whiting, non-whiting midwater trawl, and fixed gear) and at-sea mothership catcher vessels would help capture additional data for humpback whale interaction events. Onboard EM technology generally consists of three or more fixed cameras, positioned for deck and stern views to capture catch, sorting, and discard events for the purpose of catch accounting. The EM systems record at a minimum of 5 frames per second and a minimum resolution of 1080p. The cameras produce images compatible with zoom function for enhanced identification during video review. The video imagery is recorded onto onboard hard drives and is then transferred to shorebased data servers for review

¹ NMFS. 2020. Endangered Species Act (ESA) Section 7(a)(2) Biological and Conference Opinion on the Continuing Operation of the Pacific Coast Groundfish Fishery (Reinitiation of consultation #NWR-2012-867) – Humpback whale (*Megaptera novaeangliae*). Available at: https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/Opinion-26OCT2020_Groundfish%20biop-humpbacksupplement_102320_GR.pdf?null

and eventually transferred to cloud storage.

After considerable evaluation, NMFS concludes that modifying the existing EM technology is not the best method to obtain additional information. Modifications would probably not adequately capture characteristics of interest up close. Additionally, added costs for installing and maintaining additional cameras, the cost of increased video review, and the cost of additional data storage would likely prove prohibitive. NMFS considered modifying the placement of existing cameras to include areas outside or in addition to catch and sorting events that occur at sea, in order to capture potential humpback interactions. While some platforms may have redundant camera views that could allow for repositioning, in general cameras are specifically aligned to data reviewers' needs for viewing catch handling and accurately reporting discards. For both current and future west coast EM programs, NMFS will continue to consider marine mammal and sea turtle data collection when evaluating EM technology placement.

Review Protocols

The Pacific States Marine Fisheries Commission (PSMFC) currently conducts video review for EM trips on shorebased IFQ and at-sea mothership catcher vessel (MSCV) trips under an EM Exempted Fishing Permit (EFP). The purpose of the review is primarily to monitor discard events of IFQ catch, estimate the weight of discards, and compare EM estimates to the vessel's estimation for catch accounting. PSMFC currently reviews 100 percent of fishing events. Reviewers also monitor footage for marine mammals brought up in fishing gear. If a reviewer sees an interaction event, they note in the review data the disposition (discarded or retained) and condition (alive, dead, injured, etc.) of the animal. The reviewer will also save video clips or still photos of the animal. Under the EM regulatory program replacing the EFP set for 2024 implementation, EM data will still be reviewed at 100 percent for whiting trips (at-sea and MSCV). Other sectors and gear types under this program may be reviewed at lower rates, with randomly selected hauls reviewed to compare to the vessel's estimates. For lower review rates, marine mammal interactions that are noted in the vessel logbook can still have the above data collected even if a haul was not selected for IFQ discard review.

NMFS assessed the process we used during the review of a 2020 interaction event that involved EM video clips and logbook information. In this case, the west coast groundfish observer program (WCGOP) identified the event in the data and notified their marine mammal expert at the Southwest Fisheries Science Center (SWFSC). When their review was inconclusive, the SWFSC reviewer looped in NMFS WCR SFD, who then pulled in NMFS WCR PRD. The NMFS WCR PRD review was also inconclusive. At that point, NMFS WCR PRD consulted with outside experts but again the review was inconclusive as to the ultimate cause of the mortality. When consulting with outside experts, NMFS maintained confidentiality of vessel identity and its operations by blacking out identifying characteristics and time stamp data in still images of the interaction video.

Overall, we conclude the actions taken by NMFS during its review of the interaction event were appropriate given the types of information available. In its review of the event, NMFS WCR PRD noted the limitation of the EM video quality.

To improve the process and data, NMFS WCR plans to develop a clearer procedure for notification and review of interaction events involving EM footage across all sectors where EM is used (both

for current and future programs). NMFS WCR PRD welcomes a direct conversation with fishermen as part of the entanglement review process, if amenable and desired by anyone involved. NMFS WCR PRD is accustomed to that type of ongoing follow-up on cases with other strandings or entanglements. Therefore, NMFS will also look for ways to incorporate direct conversation with fishermen into the review process where appropriate.

Supplemental Documentation and Data Collection

Under the current Exempted Fishing Permit (EFP) for EM, the guidance is to report any marine mammal interactions and complete the [Marine Mammal Authorization Program mortality/injury report form](#) online. In its review of the 2020 interaction event NMFS WCR PRD noted a potential opportunity to take advantage of supplemental documentation were it to be included in the interaction event review process.

We would like to convene discussions with EM industry participants in order to develop possible supplemental documentation best practices. The EM regulatory program is currently expected to commence on January 1, 2024. As part of this, vessels will need to obtain vessel authorizations and operate under vessel monitoring plans (VMP). One option could be to develop supplemental documentation guidance in 2023 and incorporate it under VMPs. Additional guidance on providing details on a marine mammal interaction in the logbook that may be beneficial to subsequent review could be included in the VMP and the EM service provider manual.

We recognize there could be some differences in what supplemental documentation/data may be useful depending on the species/circumstances. NMFS has a useful [general guide for entanglement reporting of large whales](#). Our initial thought is supplemental documentation should focus on the following features, as appropriate:

- Animal ID – documentation of identifying characteristics of the species, population, and/or individual (e.g., would include photos of head, dorsal fin, and flukes for a whale).
- Injuries – documentation of all visible injuries; include close-up photos, along with pulled-back perspectives to see the full context of wounds on the entire body.
- Condition – documentation of distinctive body condition features such as skin condition/coloration, extent of lice or other signs of disease, emaciated skin/bones, or other possible visible signs of deteriorating body condition; should include close-up view along with pulled-back perspectives to see full context of body condition that could indicate overall health of an animal.
- Gear Description – Diagram/photo and other description of where in the gear was located, how the animal was involved with the gear, along with associated details of that part of the gear (e.g., material type, mesh size, line type/size, etc.).
- Additional gear attached/involved – photos and retention of any additional gear that is attached to animals associated with a source other than the current entanglement should be made available to PRD/other marine mammal stranding network members for inspection and collection after the vessel returns to port. Photos should include any/all features that could be used to identify the additional gear (e.g., markings, numbers, tags, etc.).